Arabian Sea Surface Winds and Ocean Transports From ERS and NSCAT

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Satellite scatterometer wind velocity measurements area new source of data for studies of seasonal-to-interannual ocean-atmosphere interactions in the Arabian Sea where the largest and steadiest wind speeds occur in northern summer. Radar backscatter measured by the first and second European Remote Sensing Satellites (ERS - 1 and ERS-2) and by the National Aeronautics and Space Administration (NASA) scatterometer (NSCAT) were used to compute surface wind stress and wind stress curl in order to compute wind-driven ocean transports (i, e., vertical, Ekman, Sverdrup). Reliability of scatterometer winds and ocean transports wil 1 be discussed, with reference to in situ measurements and a numerical weather prediction (NWP) wind data product. Several features appeared in the scatterometer data that were not present in the NWP product, such as patches of large wind stress and vertical motion near the Laccadives. Times of monsoon-wind onset along the Somali Jet were determined from satellite data. A split Somali Jet, as described by Findlater (1971) from sparse data at 1km height, was not observed with scatterometer data. During the June - September southwest monsoon, the volume of water upwelled into the Ekman layer of the Arabian Sea north of 8°N was one-third of that exiting within the Ekman layer across the southern boundary of the Arabian Sea. The June - September Somali Current transport index at 8.5°N was 15 Sv. Year-to-year transport variations were negligible.